

WHAT IS CLAIMED IS:-

1. A digital VTR magnetically recording and replaying video and audio signals at a recording data rate higher than a data rate of a bit stream which is digitally transmitted, recording the bit stream on a magnetic recording medium, by dividing the data for one screen as a baseband video signal, into a plurality of tracks, comprising:

data extracting means for dividing a first low-frequency component data from intra-encoded blocks of the bit stream, into a predetermined number L (L being a positive integer not smaller than 2) and extracting the divided low-frequency component, and extracting a second low-frequency component data having frequencies higher than the first low-frequency component data; and

recording means for recording the first low-frequency component data, being divided, in said predetermined number L of first specific regions respectively disposed in a plurality of tracks into which data for said one screen is divided, and recording said second low-frequency component data in second specific regions disposed in specific tracks of said plurality of tracks, and recording all the bit stream in the remaining regions in each track, other than said first and second specific regions.

2. A digital VTR as set forth in claim 1, further comprising:

selecting means for selecting one of a normal replay and fast replays of a plurality of speeds, by varying the transport speed of the magnetic recording medium;

control means for causing, when the fast replay at a low-speed is selected by said selecting means, the transport speed of the magnetic recording medium to be periodically alternated between a speed near the standard speed for the

normal replay and a speed near the speed for the low-speed fast replay; and

replay means for replaying, at the speed near the standard speed, at least the second low-frequency component data recorded in said specific regions from said specific tracks, and the first low-frequency component data recorded in said first specific regions in said specific tracks.

3. A digital VTR for magnetically recording and replaying a bit stream digitally transmitted, comprising:

detecting means for detecting intra-picture data in the bit stream that are replayed;

extracting means for extracting the intra-picture data from the replayed bit stream, according to the result of the detection at the detecting means;

replay mode designating means for selecting and designating one of the normal replay, slow replay and still replay, as a replay mode, and

replay data outputting means for storing the extracted intra-picture data, and outputting the intra-picture data as the replay picture data, according to the mode signal output by said replay mode designating signal.

4. A digital VTR as set forth in claim 3, wherein said replay data output means comprises:

address detecting means for detecting an address of the track at which the intra picture data is recorded;

control means for causing normal speed replay and rewinding, for reverse control, on the basis of the result of the detection of the address of the track.

5. A digital VTR as set forth in claim 3, wherein said replay data output means comprises:

control means for stopping the tape for a predetermined

A period after all the intra-picture data is extracted from the bit stream by normal speed replay.

80B(22)

6. A digital VTR for magnetically recording and replaying digitally transmitted bit stream in a predetermined recording format, comprising:

division number setting means responsive to a bit stream input, a predetermined number M (M being a positive integer) of transport packets as a unit, for setting the division number N (N being a positive integer, $N \neq M$) into sync blocks which are to form the recording format;

header appending means for appending, to data of the bit stream before the division, a header indicating the transport packet; and

format forming means for forming N consecutive sync blocks from the data after the division of the bit stream.

7. A digital VTR for magnetically recording and replaying a digitally transmitted bit stream in a predetermined recording format, comprising:

decoding means for decoding the content of data of an input bit stream;

data extracting means for extracting a series of encoded data used for fast replay, on the basis of the decoded data; and

data reducing means for reducing the data amount of the extracted encoded data to a data amount which can be recorded in K sync blocks (K being a positive integer) in said predetermined format.

8. A digital VTR as set forth in claim 7, wherein said encoded data is recorded repeatedly for a number of times about twice the multiplier of the maximum fast replay speed.

054088-03400

9. A digital VTR for magnetically recording and replaying a digitally transmitted bit stream, comprising:

detecting means for detecting intra-picture data in an input bit stream;

forming means for forming fast replay data from the intra-picture data;

header appending means for appending a first header for discriminating the fast replay data from normal replay data, and a second header for discriminating, within said normal replay data, the intra-picture data and non-intra-picture data from each other, and

recording means for recording the fast replay data together with the normal replay data on a magnetic recording medium.

10. A digital VTR as set forth in claim 9, further comprising:

replay means for replaying normal replay data, together with fast replay data from the magnetic recording medium;

separating means for separating the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by the separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether the replay mode is the normal replay or the still replay.

11. A digital VTR as set forth in claim 9, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording

medium;

separating means for separating the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium;

storage means for storing the intra-picture data, by checking the second header appended to the normal replay data selected by said separating means; and

switching means for selectively outputting the normal replay data or the intra-picture data stored in the storage means, depending on whether the replay mode is the normal replay or the slow replay.

12. A digital VTR as set forth in claim 9, further comprising:

replay means for replaying normal replay data together with the fast replay data from the magnetic recording medium;

separating means for separating the fast replay data from the normal replay data, by checking the first header appended to the replay data from the magnetic recording medium; and

switching means for selectively outputting the normal replay data or the high-speed data, depending on whether the replay mode is the normal replay or the fast replay.

13. A digital VTR for magnetically recording and replaying a digitally transmitted bit stream, comprising:

means for forming HP data for fast replay, by extracting low-frequency component from intra-encoded data of an input bit stream;

pattern generating means for forming a recording pattern for recording the HP data, being divided, and a plurality of times, in copy areas respectively set in J tracks ($J = 12 \times I + 5$, I being a positive integer) forming

one track group; and

recording means for recording in the formats according to the recording patterns, partitioning one track into a main area in which only said bit stream is recorded, and a plurality of copy areas in which said HP data is recorded, being divided;

wherein the recording patterns of the HP data A, B and C recorded, being divided into the N tracks include

a pattern TP1 in which HP data B is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a pattern TP2 in which HP data A is recorded in the copy area at the center of the track, and HP data C is recorded in the copy areas at both ends of the track,

a pattern TP3 in which HP data A is recorded in the copy areas at the center and both ends of the track,

a pattern TP4 in which HP data C is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a pattern TP5 in which HP data B is recorded in the copy area at the center of the track, and HP data C is recorded in the copy areas at both ends of the track, and

a pattern TP6 in which HP data B is recorded in the copy areas at the center and both ends of the track, and in one track group,

a first track of pattern TP4 is disposed in the center of the track group,

a second track of pattern TP1 is disposed at one end of the track group,

a third track of pattern TP6 is disposed at the opposite end of the track group,

tracks of patterns TP2 and TP3 are alternately and repeatedly disposed between the first track and the second track,

tracks of patterns TP5 and TP6 are alternately and repeatedly disposed between the first track and the third track.

14. A digital VTR as set forth in claim 13, wherein, in normal replay, the bit stream recorded in the main area is transmitted to a decoder as a replay signal, and, in fast replay, a replay bit stream is formed from the HP data, and transmitted to the decoder as replay HP data.

15. A digital VTR as set forth in claim 13, wherein the intra-encoded blocks forming the HP data belong to intra-encoded frame or intra-encoded field.

16. A digital VTR for magnetically recording and replaying a digitally transmitted bit stream, comprising:

means for forming HP data for fast replay, by extracting low-frequency component from intra-encoded data of an input bit stream;

pattern generating means for forming a recording pattern for recording the HP data, being divided, and a plurality of times, in copy areas respectively set in J tracks ($J = 12 \times I + 5$, I being a positive integer) forming one track group; and

recording means for recording in the formats according to the recording patterns, partitioning one track into a main area in which only said bit stream is recorded, and a plurality of copy areas in which said HP data is recorded, being divided;

wherein the recording patterns of the HP data A, B and C recorded, being divided into the N tracks include

a pattern TP1 in which HP data B is recorded in the copy area at the center of the track, and HP data A is recorded in the copy areas at both ends of the track,

a sixth track of pattern TP1 is disposed at the head or tail of the track group, and on the same side of the first

track as the fourth track,

a seventh track of pattern TP2 is disposed next to the track of pattern TP1, and on the same side of the first track as the fourth track,

an eighth track of pattern TP9 is disposed at the tail or head of the track group, and on the same side of the first track as the fifth track,

tracks of patterns TP3 and TP4 are alternately and repeatedly disposed between the seventh track and the fourth track,

tracks of patterns TP8 and TP9 are alternately and repeatedly disposed between the eighth track and the fifth track.

17. A digital VTR as set forth in claim 16, wherein, in normal replay, the bit stream recorded in the main area is transmitted to a decoder as a replay signal, and, in fast replay, a replay bit stream is formed from the HP data, and transmitted to the decoder as replay HP data.

18. A digital VTR as set forth in claim 16, wherein the intra-encoded blocks forming the HP data belong to intra-encoded frame or intra-encoded field.

ADD 03

ADD C5

add H2